4 Multiplying and Dividing Decimals

October 9, 2019   3:10 PM

Math 9   Name: _____

Multiplying and Dividing Positive and Negative Decimal Numbers (3.4 and 3.5)   First, some humour…

Multiplication and Division Sign Rules

It works the same for multiplication and division!

same sign

Pos

$\oplus \times \oplus = \oplus$
$\ominus \times \ominus = \oplus$

$\oplus \div \oplus = \oplus$
$\ominus \div \ominus = \oplus$

NEG

$\oplus \times \ominus = \ominus$
$\ominus \times \oplus = \ominus$

$\oplus \div \ominus = \ominus$
$\ominus \div \oplus = \ominus$

Example 1: Write the sign for each of the following:

a) (-6)(-12) __+__
b) (4)(-4) __−__
c) (9)(8) __+__

e) (-9)(0) __0__   0 is
f) (0)(-6) __0__   neither
                     pos nor
                     neg!

Multiplying Decimal Numbers

Example 2:

[Bow Tie Method]

```
  1   1
 2.34        ← 2 decimal place
×1.4         ← 1 decimal place
─────
  936
 2340
─────
3.276        ← 3 decimal places
```

[Lattice Method]

```
    2 . 3   4
  0   0   0    1
0   2   3   4
  0   1   1    .
3   8   2   6    4
  2   7   6
```

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Example 3: (1.3) (-2.4)

$$\begin{array}{r} 1.3 \\ \times\ 2.4 \\ \hline 1\ 5\ 2 \\ 2\ 6\ 0 \\ \hline -3.1\ 2 \end{array}$$

1.3

| 0 / 2 | 0 / 6 | 2 |
| 0 / 4 | 1 / 2 | .4 |

3 ... 1 ... 2

(-3.12)

Example 4: (-0.03)(-0.002)

$$\begin{array}{r} 0.002 \\ \times\ \ 0.03 \\ \hline 0.00006 \end{array}$$

Example 5: Bob dives at a rate of 11.4 m/second. If he dives for 3.2 seconds, how far will he dive?

$$\begin{array}{r} 11.4 \\ \times\ 3.2 \\ \hline 1\ 2\ 8 \\ 3\ 4\ 2\ 0 \\ \hline 3\ 6.4\ 8 \end{array}$$
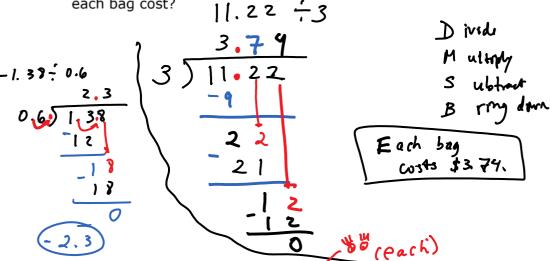
He will dive 36.48 m in 3.2 sec.

Example 6: You have 35 shares in Coca Cola stock. The price of 1 share changed by $-1.64. How much money did you lose?

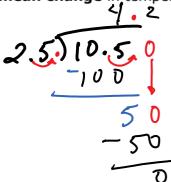$$\begin{array}{r} 1.64 \\ \times\ 3\ 5 \\ \hline 8\ 2\ 0 \\ 4\ 9\ 2\ 0 \\ \hline -5\ 7.4\ 0 \end{array}$$

(+)×(-)

You lose $57.40.

negative

Dividing Decimal Numbers

Example 7: You spent $11.22 on 3 bags of chips. How much does each bag cost?

$$11.22 \div 3$$

$$3 \overline{)11.22} = 3.74$$

$$-9$$
$$2\,2$$
$$-21$$
$$1\,2$$
$$-12$$
$$0$$

$-1.38 \div 0.6$

$$0.6 \overline{)1.38} = 2.3$$

$$-12$$
$$18$$
$$-18$$
$$0$$

$\boxed{-2.3}$

D ivide
M ultiply
S ubtract
B ring down

Each bag costs $3.74.

$\frac{\$}{0}$ (each)

Note: If there is a ch**ange** _____ per h**our** _____, m**inute** _____, s**econd** _____, it usually means you need to **divide** _____!

Example 8: The temperature decreased by 10.5°C in 2.5 hours. What is the **mean change** in temperature per hour?

$$10.5 \div 2.5$$

$$2.5 \overline{)10.5\,0} = 4.2$$

$$-100$$
$$5\,0$$
$$-50$$
$$0$$

The mean change in T° is 4.2°C

Assignment:

⭐ Multiplication Sheet.

Sec. 3.4 (Multiplication) p. 127   ⭐⭐ 9ac, 10   ⭐⭐⭐ 14, 15a, 16ac

Sec. 3.5 (Division) p. 134   ⭐ 3ade, 7odd   ⭐⭐ 6, 8, 11a, 15   ⭐⭐⭐ 17ac, 18, 19

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